epiTRENDS

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Radiation from Hanford: How Much Did People Get and What Does it Mean for Their Health?

Thousands of people who lived in Washington, Oregon, and Idaho in the 1940s and 1950s are concerned about their radiation dose and the effect on their health from radioactive materials released from the Hanford Nuclear Reservation. This article describes one of the programs addressing this issue and the results of a study that will become available to citizens and their health care providers during the next year.

How much radiation did people get?

The Hanford Individual Dose Assessment (IDA) Project is a public service program that will provide citizens with an estimated individual thyroid dose from exposure to iodine-131 released into the air by the Hanford facilities. The project has been developed and is operated jointly by the Washington State Department of Health, the Oregon Health Division, and the Idaho Division of Health with funding from the Centers for Disease Control and Prevention.

The Hanford IDA Project will use the Hanford Environmental Dose Reconstruction (HEDR) Project's computer models to calculate individual dose estimates. The HEDR Project was created in 1988 to estimate how much radioactive material reached the public and the resulting radiation dose from this material. According to the HEDR study, iodine-131, which concentrates in the thyroid, accounted for more than 98% of the radiation dose people received. Nearly all the iodine-131 emitted by the Hanford facilities was released between December 26, 1944, the start of plutonium production, and December 31, 1957.

Persons who lived or spent time in the HEDR study area (map) during this time may request an estimated individual thyroid dose from exposure to iodine-131 released to the air. The HEDR computer models use a person's age, gender, residences in the HEDR study area, and the amount and type of food consumed to calculate an individual dose estimate. The HEDR computer models also incorporate what Hanford released, the weather at the time, how the releases moved through the environment, the pathways by which people were exposed, and many other variables.

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Map not included in electronic copy.

HEDR Project Study Area

The box (upper center) indicates the boundaries of the study area.

Hanford Radiation *(from page 1)*

What does it mean for their health?

Persons exposed to radiation from Hanford have questions about how these exposures may have affected their health. Most scientists believe that the higher the radiation dose the higher the risk of disease. Studies suggest that internal exposure to iodine-131, such as the exposure people received from Hanford, can cause thyroid cancer. However, human and animal studies of iodine-131 and thyroid cancer have not yet provided clear answers about the size of the risk at different dose levels.

More information on the risk of all thyroid diseases from internal iodine-131 exposure will be available upon completion of the Hanford Thyroid Disease Study (HTDS) being conducted by the Fred Hutchinson Cancer Research Center in Seattle. This study is using the HEDR computer models and the results of individual thyroid evaluations to investigate whether thyroid disease is increased among persons exposed to atmospheric releases of radioactive iodine from Hanford between 1944 and 1957. The research team anticipates results in early 1999. The results may also show how risk changes at different levels of dose. The Hanford IDA Project and the HTDS will work together to determine how a person can compare an estimated individual thyroid dose with the results from HTDS.

Dissemination of Information

Late this year, the state health agencies in Washington, Idaho, and Oregon will mail initial forms for requesting dose estimates to approximately 43,000 households included on the Hanford Health Information Network mailing list.* The project also will be publicized through newspapers and radio announcements. Citizens who lived within the HEDR study area between 1944 and 1957 may obtain their estimated individual dose by completing two forms. The Washington State Department of Health (DOH) will process all forms, calculate the dose estimates, and return the results with a booklet of information to help citizens understand their dose estimates and what it means to their health.

Before this program is announced to the public, the three state health agencies will work with health care provider organizations to distribute educational materials to primary care practitioners. Please contact specific programs directly to request additional information (sidebar). ◆

*The Hanford Health Information Network is a federally funded collaboration among the state public health agencies in Washington, Oregon, and Idaho, and nine Indian nations. HHIN responds to citizens and health care providers who want to know more about the potential health effects of radioactive materials released from Hanford.

For Additional Information

Hanford Individual Dose Assessment Project
1-800-432-6242
http://www.doh.wa.gov/ehp/rp/rp-ida2.html

Hanford Environmental Dose Reconstruction Project
1-800-545-5581

Hanford Thyroid Disease Study
1-800-638-4837
http://www.fhcrc.org/science/phs/htds/

Hanford Health Information Network (Washington Program)
1-800-522-4446
http://www.doh.wa.gov/hanford

National Survey Shows Washington Has Made Great Strides Toward 90% Immunization Coverage for 2-Year-Olds

The latest results from the annual National Immunization Survey conducted by the Centers for Disease Control and Prevention (CDC) show that an estimated 82% (± 3.0%) of Washington State children aged 19–35 months have received the recommended schedule of vaccinations* for the survey period July 1996 to June 1997. This represents a 7% increase in coverage since the July 1994 to June 1995 survey period, and is 4% higher than the current United States average.

Results for Seattle-King County show 86% (±3.6%) coverage levels, the highest rates for a surveyed urban area in the United States. The report also demonstrates an impressive leap in the state hepatitis B coverage rate from 47% (±4.5%) for the study period ending June 1995 to 83% (±2.8%) by June 1997. The National Immunization Survey is a random-digit-dial telephone survey that provides estimates of vaccination coverage among children aged 19–35 months for all states and 28 selected urban areas.

Although the survey does not address the reasons for Washington's rapid rise in immunization coverage rates, ongoing public health efforts concurrent with these increases include a strong Immunization Action Coalition, the Department of Health's statewide *"Don't Wait. Vaccinate."* aware-

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*Four or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT), three more more doses of poliovirus vaccine, and one or more doses of measles-containing vaccine (known as 4:3:1).

Monthly Surveillance Data by County

February 1998* – Washington State Department of Health

County	E. coli O157:H7	Salmonella	Shigella	Hepatitis A	Hepatitis B	Non-A, Non-B Hepatitis	Meningococcal Disease	Pertussis	Tuberculosis	Chlamydia	Gonorrhea	AIDS	Pesticides†	Lead§#
Adams	0	0	0	0	0	0	0	0	0	2	0	0	0	0/0
Asotin	0	0	0	1	0	0	0	0	0	3	0	0	1	0/0
Benton	0	0	0	0	0	0	0	0	0	5	1	0	0	0/27
Chelan	0	0	0	0	0	0	0	0	0	3	1	0	0	2/27
Clallam	0	0	0	0	0	0	0	0	0	3	0	0	0	0/#
Clark	0	1	1	2	1	0	0	0	0	50	9	0	0	0/0
Columbia	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Cowlitz	0	0	0	0	1	1	0	2	0	5	0	0	0	0/15
Douglas	0	0	0	1	0	0	0	0	0	1	0	0	0	0/0
Ferry	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Franklin	0	0	0	0	0	0	0	0	0	3	1	0	0	0/#
Garfield	0	0	0	0	0	0	0	0	0	2	0	0	0	0/0
Grant	0	0	0	0	0	0	0	2	0	5	0	0	0	1/9
Grays Harbor	0	0	0	0	0	0	0	0	0	11	2	0	0	0/0
Island	0	0	0	0	0	0	0	0	0	9	1	0	0	0/#
Jefferson	0	0	0	0	0	0	0	0	0	1	0	0	0	0/#
King	0	2	0	0	0	0	3	7	4	300	76	21	2	2/22
Kitsap	0	0	0	0	0	0	0	0	0	35	4	0	0	0/17
Kittitas	0	0	0	0	0	0	0	0	0	5	0	1	0	0/0
Klickitat	0	0	0	0	0	0	1	0	0	3	0	0	0	0/0
Lewis	0	1	0	0	0	0	1	0	0	7	2	0	0	0/0
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Mason	0	0	0	1	0	0	0	1	0	8	1	0	0	1/#
Okanogan	0	0	0	0	0	0	0	0	0	3	0	0	0	0/#
Pacific	0	0	0	0	0	0	1	0	0	0	2	0	0	0/#
Pend Oreille	0	0	0	0	0	0	1	0	0	0	0	0	0	0/0
Pierce	0	0	0	4	0	0	0	4	5	145	29	4	0	1/100
San Juan	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Skagit	0	1	0	0	0	0	0	1	1	8	3	0	0	0/8
Skamania	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Snohomish	0	1	0	4	2	1	2	3	3	49	6	0	1	0/5
Spokane	0	0	0	30	0	0	0	0	2	38	7	1	1	2/19
Stevens	0	0	0	1	0	0	0	0	0	2	0	0	0	0/0
Thurston	2	1	0	0	0	0	0	0	0	37	0	1	1	0/#
Wahkiakum	0	0	0	0	0	0	0	0	0	1	0	0	0	0/0
Walla Walla	0	0	0	0	0	0	0	0	0	8	0	0	0	0/#
Whatcom	0	0	0	0	0	0	1	0	0	20	1	1	0	1/#
Whitman	0	0	0	0	0	0	0	0	1	3	0	0	0	0/#
Yakima	0	0	4	0	0	0	0	7	1	25	0	1	0	1/9
Unknown														0/0
Current Month	2	7	5	44	4	2	10	27	17	800	146	30	6	11/279
February 1997	1	58	12	71	8	3	10	31	16	753	187	68	10	13/388
1998 to date	2	7	5	50	5	2	16	29	29	1609	283	67	15	19/520
1997 to date	2	64	15	80	8	3	17	35	42	1555	393	112	17	23/682

* Data are provisional based on reports received as of February 28, unless otherwise noted.

† Unconfirmed reports of illness associated with pesticide exposure.

§# Number of elevated tests (data include unconfirmed reports) / total tests performed (not number of children tested); number of tests per county indicates county of health care provider, not county of residence for children tested; # means fewer than 5 tests performed, number omitted for confidentiality reasons.

Foodborne Outbreak of Cryptosporidiosis Reported

WWW Access Tips

The Centers for Disease Control and Prevention provides information about cryptosporidiosis at: http://www.cdc.gov/ncidod/diseases/crypto/crypto.htm

Questions? Comments?

If you have a question about epidemiologic or public health issues, contact the editors at the address on the mailing panel or by email at function@u.washington.edu

The Spokane Regional Health District recently investigated a foodborne outbreak of cryptosporidiosis. The outbreak appears limited to a single event, a banquet held in a Spokane restaurant in December.

Cryptosporidiosis is a parasitic infection of humans and other animals. Incubation ranges from a few days to over a week. Profuse watery diarrhea is a prominent symptom. Other typical symptoms also reported in this outbreak were fever/chills, headache, body ache, cramps, nausea, and vomiting. Symptoms of cryptosporidiosis fluctuate, and can persist for a month or longer. Although generally a mild illness, cryptosporidiodis may be severe in immunocompromised persons. No effective treatment has been identified.

Of the 62 persons attending the banquet, 90% were affected. Eight of 10 stool samples were positive for *Cryptosporidium*. Routine O&P (ova and parasite) screens may not include *Cryptosporidium*, which should be specifically requested if cryptosporidiosis is suspected.

Case histories were obtained from all banquet attendees and 16 food handlers. With a high attack rate and multiple items consumed, no single food dish was identified as the source of exposure. An analysis of ingredients showed that imported raw green onions seemed to have the most frequent association with infection. However, an infected food handler could have been the source of exposure for the outbreak. Interviewing and stool testing neither confirmed nor ruled out this possibility.

Reports of foodborne outbreaks of cryptosporidiosis are rare. An episode in Maine in 1993 was associated with unpasteurized apple cider that had been contaminated with cow manure. A 1995 outbreak in Minnesota was associated with a chicken salad possibly contaminated by a food handler who operated a daycare facility in her home. Even though cryptosporidiosis is usually contracted through contaminated water, these episodes demonstrate other potential sources of infection.

Immunization *(from page 2)*

ness campaign, endeavors of public and private providers to immunize patients at every opportunity, and Department of Health efforts to build state and local capacity in vaccine delivery. Another promising intervention being implemented in several areas across the state is community-wide immunization tracking.

While enthusiastic about the upward climb in Washington State's immunization rates, the Department of Health continues to face the challenge of reaching 90% coverage rates for two-year olds. Other challenges include raising varicella vaccine acceptance among health care providers and a recent increase in pertussis outbreaks across the state. An adult pertussis vaccine, once licensed, could significantly reduce the spread of pertussis from asymptomatic adults to susceptible children, and will help to remove pertussis from the preschool and school-aged populations.

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